Implementing Benson's Relaxation Training in Hemodialysis Patients: Changes in Perceived Stress, Anxiety, and Depression

Ali Mahdavi, Mohammad Ali Heidari Gorji, Ali Morad Heidari Gorji[1], Jamshid Yazdani[2], Maryam Didehdar Ardebil[3]

Department of Nursing, Nasibeh Nursing College, Mazandaran University of Medical Science, Sari, [1]Education Center of Development, Mazandaran University of Medical Science, Sari, [2]Department of Health, Mazandaran University of Medical Science, Sari, Iran, [3]Department of Psychology, Panjab University, Chandigarh, India

Abstract

Background: Hemodialysis patients usually experience high levels of psychological stress, anxiety, and depression. Reducing these matters in patients provides more psychological resources to cope with their physical situation. **Aim:** The present study aimed to explore the efficacy of Benson's relaxation technique for stress, anxiety, and depression of patients with hemodialysis. **Materials and Methods:** Eighty hemodialysis patients were selected from two hospitals as an intervention and control groups. Then Benson relaxation training was implemented in the intervention group for 15 min twice a day during 4 weeks. The patients were assessed by depression, anxiety, and stress scale; which was completed before and after the intervention. **Results:** There were significant differences between stress and anxiety levels in case group before and after intervention ($P < 0.001$) and there is no meaningful difference between the mean of depression value in case group before and after intervention ($P < 0.22$). **Conclusion:** Instructing Benson's relaxation technique is accompanied by reducing stress and anxiety level of hemodialysis patients. Reducing stress and anxiety levels can provide more calmness for the patients so that pursuing medical therapy would be accompanied with more tranquility. Authors have suggested to improve and prevent the patients' psychological problems as well as other chronic disorders by applying this practice.

Keywords: Anxiety, Benson's relaxation, Depression, Hemodialysis (HD), Stress

Introduction

Chronic renal failure is a progressive deterioration of renal function impairment which leads to interference with the metabolism of body water and electrolytes.[1] Two — three percent of the current world's population is suffering from chronic renal failure and every year the rate increases twice.[2] The standard recommended treatments are renal transplantation, hemodialysis (HD), and peritoneal dialysis for patients with

renal failure.[3] These methods increase the survival, although could be a source of stress also.[4] The patients underwent HD for a long time, suffer from physical and mental stresses, and experience serious changes in lifestyle and personality.[5]

In the last 3 decades, psychological factors have attracted more attention in end stage like patients with chronic renal failure.[6] Previous researches have reported some psychological problems such as suicide ideation, depression, anxiety, sexual disorders, interpersonal problems, paranoia, physical complain, compulsive disorders, psychoses, aggression, and phobia; although researchers are not unanimous in terms of prevalence and intensity of these problems among HD patients.[7] Navidian *et al.*, reported that 10% of HD patients had a history of psychiatric disorders while it was only 2.5% in the general population.[8]

Stress refers to the consequence of the failure of a person to respond appropriately to emotional or physical threats.[9] Mental health is directly related to perceived stress.[10] Inappropriate coping decreases quality of life and leads to physical, mental, economic, social, and emotional problems.[11] Regarding pharmacological stress control methods are costly and usually accompanied complications. Recent researches focused on nonpharmacological techniques.[12] Relaxation is one of most useful nonpharmacological technique[13,14] which reduces stress through impact on mental and physical conditions, depression, mood, anxiety, and self-steam.[15] Among relaxation methods, Benson's relaxation method (1970) is one of the easiest to learn and administration.[16] Despite the importance of reduction of stress and anxiety among HD patients, there is no evidence to evaluate the impact of nonpharmacological methods especially relaxation in HD patients in Iran. Therefore, this study aimed to evaluate the impact of Benson's relaxation method of stress reduction in HD patients in Iran.

Materials and Methods

Sampling

The present research was a randomized trial with a control group. The study population included 80 HD patients from Imam Khomeini and Fatemeh Zahra hospitals in the Mazandaran city during 2011, who met the inclusion criteria. This study was approved by the ethics committee of Mazandaran Medical Science University. Eighty ($N =$ 40 in experimental group and $N = 40$ in the control group) patients were selected randomly based on a random number table. Sampling was parallel, the first eligible patients assigned in the intervention group and the next one in the control group. This process was applied to all samples. All samples who met the inclusion criteria were selected randomly and had the same chance of participation. Sample selection done during week in three times, morning, afternoon and evening.

The inclusion criteria were: Age range between 18 and 65 years; at least 2 months dialysis history; active file recordation in mentioned hospitals; no comorbidity with other chronic disease like cancer, heart disease, etc. (diabetes and hypertension are included, because usually this comorbidities are a part of renal failure; excluding them leads to limitation in generalization). Exclusion criteria were: The unwillingness of a patient, physical disability, regular tranquillizer or sedative drugs; had a previous history of psychiatric disorders, suffered from stress other than dialysis in the past 6 months, incomplete training (below 55 sessions), and peritoneal dialysis or a kidney transplant. Sample size was calculated based on the pilot study with:

$$n = \frac{(z_{1-\alpha/z} + z_{1-\beta})^2 \times (\delta 1^2 + \delta 2^2)}{(\overline{X}_1 - \overline{X}_2)^2}$$

Considering mean and standard deviation (SD) before (16.5 ± 6.9) and after (13.13 ± 2.27) with 95% confidence level, sample size was calculated as $N = 37$, however prediction of a 10% drop during intervention $N = 40$ was the final sample size.

Tools

Based on research aims demographic characters included: Age, gender, marital status, income level, education level, dialysis time and duration, shelter status, medicine usage, other disease, etc. Depression, stress, and anxiety was assessed by depression anxiety stress scale (DASS21), as these questionnaires assessed the three variables contemporarily with limited questions in comparison to other standardized questionnaires. The DASS is a quantitative measure of distress along the three axes of depression, anxiety, and stress. It is not a categorical measure of clinical diagnoses. The individual DASS scores do not define appropriate interventions.

This questionnaire had been presented for the first time by Lovibond in 1995[17] which included three subscales and every subscale included seven questions. In translated version, each item has choices of never, little, moderate, and many. The lowest score is related to every zero question and the highest score is 3.[18] In this questionnaire the questions 2, 4, 7, 9, 15, 19, and 20 are related to anxiety; 3, 5, 10, 13, 16, 17, and 21 are related to depression and the questions 1, 6, 8, 11, 12, 14, and 18 assess the stress.

Defined cutoff points are as follows:
1. Stress: Scores from 0-7 is normal, 8-9 mild, 10-12 average, 13-16 severe, and higher than 17 is very severe.
2. Anxiety: 0-3 is normal, 4-5 mild, 6-7 average, 8-9 severe, and higher than 10 is very severe.
3. Depression: Score 0-4 is considered normal, 5-6 mild, 7-10 average, 11-13 severe, and higher than 14 is very severe.[19]

Validity and reliability of this questionnaire were fair in Iran. For instance, in a study done by Sahebi *et al*., on 970 students and armies, the authors reported the translated questionnaire is comparable with the original one and there is high internal correlation 0.77, 0.79 and 0.78 for depression, anxiety and stress respectively, according to this questionnaire.[20] The study by Moradi panah in Iran has also reported 0.94 Cronbach's alpha for depression 0.92 for anxiety 0.82 for stress.[21]

Intervention

DASS21 questionnaire was administrated by nurses blindly before and after intervention by self-reporting method or nurses recorded data in case they were illiterate or had visual disorders. After patients signed consent to participate, we used video exhibition to train the Benson's

relaxation method to patients and their care givers in dialysis center. In first step, the patients and their care givers learned relaxation through exhibition in HD center, then the CD was provided and asked care giver to observe and guide patients to practice correctly twice a day in morning and evening for 15 min during 4 weeks.[22] Relaxation was practiced whenever they came to the center or contacted them by phone daily to remind on time practice.

The instruction of the Benson's relaxation technique included the following steps:
1. Stay in confidence position.
2. Close your eyes.
3. Calm down and relax your body, relax from your toes to top of your head.
4. Take a breath from your nose and keep your awareness. Exhale from the mouth whenever exhaling, repeat one word or number, inhale, and exhale with comfort and confidence.
5. Do this for 15 min. Try to keep your body and muscles relaxed. Then open your eyes slowly and do not move for few minutes.
6. Do not worry, it is not important to which level of relaxation you have reached, leave your body and let it happen itself. Do not care about interfering thoughts and let them go.[23]

Data analysis
Data were analyzed using the SPSS software (Statistical Package for the Social Sciences, version 16.0, SPSS Inc, Chicago, Ill, USA). Descriptive statistics such as central and dispersion indexes were first run and then regarding normal distribution the independent sample *t*-test was applied to compare the two groups. According to the terms of the scattering data regarding correlation was not significant, there was not a meaningful significant linear relationship (data distribution is not significant). Therefore, the simplest parametric method was used for analysis (independent and paired *t*-test). Demographic data categorized and quantitative data converted to qualitative data and K-square was used to analyze the obtained data. Pre- and post-intervention scores in each group were compared using the paired *t*-test. The chi-square test was used to compare qualitative variables. The level of significance was defined as 0.05.

Results
Patient who practiced 55 times and above was considered as a participant who completed the study. There was no drop in experimental and control groups because of daily follow-up and patients' good cooperation. The samples comprised 44 male (55%) and 36 females (45%) and the mean age was 47.98 ± 12.53. The maximum age was 65 and minimum 18. Seventy-one people were married (88.8%), eight were single (10%), and one was (1.2%) [Table 1].

Two groups were compared with K-square and no significant differences were seen in demographic characters between the two groups. The comparison of two mean scores before and after intervention in terms of stress and anxiety showed a significant difference between two time frames ($P < 0.001$). However in the control group, there was no significant difference in two time frame scores ($P > 0.11$, $P > 0.18$).

There were no significant difference between depression levels in the experimental and control groups, just in experimental group there was an insignificant difference after intervention ($P > 0.22$) [Table 2].

There were significant relationships between anxiety, stress, and depression with demographic characters such as age, gender, marital status, economic level, education, dialysis duration, dialysis frequency in year and week, shelter status, content disease, and using other medicine (exception renal failure) ($P > 0.05$).

Discussion
Based on the finding in present study; means of stress, anxiety, and depression is high among the patients with hemodialysis (HD). As it is obvious from [Table 2], there are significant differences in mean and standard deviation of control and intervention groups in case of stress and anxiety scores.

Same results have been reported in the studies by Lizica *et al.*,[23] Mollahadi *et al.*,[24] Shafipour *et al.*,[13] Eghbali *et al.*,[25] and Rajamanickam and Kumar.[26] They also suggested that stress reduction influences quality of life in the patients, but they need regular psychotherapy also. This study has shown that there is a difference between the mean and standard deviation of the group who received Benson's relaxation and who did not receive. The changes in stress scores were considerable. There is growing evidence to evaluation of the influence of Benson's relaxation as a cost effective and safe technique on different chronic disease.[3,14,17,27-30,32,33] Hosseini *et al.*, confirmed that psychological training based on the standard protocols and the use of medicine resulted in comparable decreases in the severity of depressive and anxiety symptoms of HD patients.[34]

In another study Rahimi *et al.*, which evaluated palliative care effects during 4-6 months on stress, anxiety, and depression; the results showed positive effects of care on HD patients.[35] Kim *et al.*, also explored the effect of music therapy on stress, anxiety, and depression in HD patients and confirmed significant stress reduction in HD patients after music therapy.[36] According to evidence practice of the Benson's relaxation technique, results have shown significant gains in tons if practiced

Table 1: Distribution of patients according to demographic characters

Variables	Groups	Intervention	Control	*P*-value
Gender	Male	19	25	0.178
	Female	21	15	0.205
Education	Illiterate	6	9	0.211
	Plus 10	23	17	
	Undergraduate	8	12	
	Graduate	3	4	
Disease	Renal failure	13	9	0.222
	Renal failure+hypertension+diabetes	27	31	
Disease duration	Below 5 years	31	36	0.214
	Above 5 years	9	4	
Dialysis hours	3	11	7	0.422
	4	29	33	
Shelter status	Owner	36	37	1.00
	Rented	4	3	
Medicine usage	Yes	22	30	0.061
	No	18	10	
Accusation	Employed	2	1	0.831
	Self-employed	3	4	
	Retired	7	5	
	Unemployed	28	30	
Income	Low (below 5,000,000)*	23	25	0.180
	Medium (5,000,000-10,000,000)	14	10	
	High (above 10,000,000)	3	5	
Number of children	Below 2	16	16	0.577
	2-5	15	21	
	Above 5	9	3	

*10,000 Rial=1 US dollar in 2011

Table 2: The mean comparison between two groups' stress, anxiety, and depression

	Groups	Before intervention	One month after intervention	Statistical method	*P*-value
Stress scores	Experimental	11.52±2.75	10.22±2.13	Pair *t*-test	<0.001
	Control	11.18±2.38	10.94±2.26	Pair *t*-test	>0.18
Anxiety	Experimental	8.4±3.1	7.1±2.66	Pair *t*-test	<0.001
	Control	7.85±3.43	8.2±3.11	Pair *t*-test	>0.11
Depression	Experimental	9.04±3.36	8.9±3.42	Pair *t*-test	*P*<0.22
	Control	8.92±3.1	9.16±2.84	Pair *t*-test	*P*>0.17

regularly for long time period. Hence, in present study insignificancy of intervention and control group in depression is explainable by limited practiced time period. The results of this study and other related studies in this context showed that using cost effective, low risk, and easy methods by patients could help the patients to reduce the stress and lead to several benefits if practiced daily; beside the palliative care and alternative treatments in HD patients. The level of stress was high among HD patients, although it decreased after the intervention, but still it was at a higher level. Regarding some limitations of this study, researchers could not observe all sessions and there can be some fake report from patients or care givers or it could be due to limited practice time (1 month). On the other hand, DASS21 is not a categorical measure of clinical diagnoses. The individual DASS scores do not define appropriate interventions. Therefore, using complementary tools is recommended in future studies.

Conclusion

Generally we have mentioned in Benson's relaxation method in text, our findings confirmed the effect of relaxation on stress and anxiety with several studies and the recommendations are mostly emphasized on long-term, regular practice. The most effects of relaxation works through the decrease of metabolism and strengthening of heart contractions, respiration, and blood pressure; and release of epinephrine on the sympathetic system of a patient's physiological condition. Thus, by teaching the nurses can benefit the patients can by lower cost and prevent from extra problems as it is easy to use and teach to all levels of patients.

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